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ABSTRACT

To test the hypothesis that induced mental imagery would facilitate the contemplation and reflection that have been suggested as being important to the writing process, a study investigated the effects of instructions to induce mental imagery upon the written language of young children. Subjects, 28 third grade children, were randomly assigned to one of two treatment conditions: one group received instructions to induce mental imagery, while the other group received instructions to "think about" what they read. After silently reading a section of a story, subjects were asked to predict what would happen next. Analysis of results revealed no significant difference between the two groups for thought units, facts, or predictions, but a statistically significant difference in favor of the imagery group was found for total number of words written. This difference in the number of words written suggests that mental imagery is a viable strategy for young writers. (JL)

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INDUCED MENTAL IMAGERY AND THE WRITTEN LANGUAGE EXPRESSION OF YOUNG CHILDREN

Reading and writing are reciprocal processes (Elkind, 1976). Through the reading process the learner can gain or receive information and through the writing process the learner can express or share information. Children, in the process of developing literacy skills, need many opportunities to produce and to read written language (Williamson, 1982). While literacy has always been the goal of American education, few would argue that in the past the primary focus on literacy has been directed toward helping children learn to read rather than to write (Sealey, Sealey, and Millmore, 1979). During the last several years, however, basic research and curriculum development in writing have received greater emphasis (Applebee, 1981;

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Graves, 1980; King & Rentel, 1981).

Writing has been defined as "a process of selecting, combining, arranging, and developing ideas in effective sentences, paragraphs, and often, longer units of discourse" (National Council of Teachers of English, 1982). King (1978) indicates that writing necessitates active involvement and reflection in the ordering of one's thoughts. Graves (1978) stresses that writing is a complex process requiring the analysis and synthesis of many levels of thought. It is a generally agreed upon notion that writing contributes to cognitive development by fostering thinking and learning (Graves, 1978; King, 1978; Stallard, 1974).

Mental imagery has been suggested in the literature as a strategy for enhancing and facilitating listening comprehension (Guttman, Levin & Pressley, 1977; Shimron, 1975), oral expression (Gambrell, 1982) and reading comprehension (Linden & Wittrock, 1981; Pressley, 1976; Steingart & Glock, 1979). No research could be located that specifically addressed mental imagery and the writing process, however, writing has been described as the "representation of a person's thoughts and images... and is closely related to the internal manipulation of external experiences" (Sealey, Sealey & Millmore, 1979).

Stallard's (1974) research suggests that good writers spend more time contemplating or reflecting as they write and that they write at a slower pace (about half as many words per minute) than their randomly selected counterparts. It appears that there is theoretical and empirical evidence that suggests that cognitive strategies which encourage contemplation and reflection serve to enhance written expression.

The primary hypothesis set forth in the present study was that induced mental imagery would facilitate contemplation and reflection which have been suggested as an important aspect of the writing process (Graves, 1978; King, 1978). The study described here was designed to investigate the effects of instructions to induce mental imagery upon the written language of third grade students.

METHOD

Subject

Subjects participating in this study were 28 third grade students from a public elementary school in a lower-middle to middle SES area. The children came from two classrooms in the school. All subjects met the following criteria for inclusion in the study: (1) reading comprehension scores of at least 2.0 grade level on the California Achievement Test, (2) Cognitive Abilities Test scores between the 15th and 90th percentile, (3) teacher verification of reading and writing skills at or above the second grade level, and (4) native speakersof English.

Materials

Materials used in this study consisted of a short story, approximately 250 words, adapted from a text which was on the recommended list for the county but was not used at the school where the study was conducted. The narrative story, about a group of children and an imaginary animal, was judged by the classroom teachersto be similar to the narrative stories found

in the basal readers used in the school. The story was typed and bound in a 10 page booklet. Each text page ended at a prediction point (a logical point in the story where predictions about forthcoming events could be made). Following each text page there was a page with the question, "What do you think is going to happen next in the story?" and lined space for the subject's written response.

Procedure

Subjects were assigned randomly to one of two treatment conditions. Subjects under one treatment condition received instructions to induce mental imagery while subjects under the second treatment condition received instructions to "think about" what they read.

The subjects met with the investigator in groups of five to eight for one session which lasted approximately 25 minutes. All subjects were given the following general directions: "Today you will be silently reading a story about an interesting animal and answering some questions. You will be reading the story in sections. After reading each section of the story you will be asked to predict, or tell about, what you think will happen next. Spelling will not count. Take your time while writing your answers." Specific instructions were then given according to treatment condition. Subjects in the mental imagery group received the following instructions: "Making pictures in your head about what you read will help you understand and remember the story. Make pictures in your head about everything that

happens in this story. Also, when you write about what you think is going to happen next, remember to make pictures in your head about the story." The instructions for the second treatment group were identical to those of the mental imagery group except that, instead of being instructed to "make pictures in your head about the story," the subjects were told to "think about the story."

After silently reading the first section of the story the subjects turned the page and composed their response to the prediction question, "What do you think will happen next?" This procedure was repeated for each of the four remaining sections of the story.

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RESULTS

The written responses of the subjects to each of the 5 prediction questions were scored for: (1) number of thought units (Hunt, 1965), (2) number of facts directly stated in the text, (3) number of predictions, and (4) total number of words. Table 1 presents the means and standard deviations for the imagery and no-imagery treatment conditions.

Insert Table 1 about here

To test for significant differences between the imagery and no-imagery treatment groups independent t-tests across group means were conducted for each of the dependent variables: (1) thought units, (2) facts, (3) predictions, (4) total number of words written. The analysis revealed no statistically significant differences for thought units, facts or predictions, however, a statistically significant difference in favor of the imagery group was found for total number of words written, $t\ (1,26) = 2.73$, $p < .05$.

DISCUSSION

The purpose of this study was to investigate the effects of instructions to induce mental imagery upon the written language

of young children. The data indicate that instruction to induce mental imagery facilitates the written language expression of third grade subjects with respect to total number of words produced. It should be noted that a stringent procedure was used for calculating total number of words produced in that repetitions and connectives were not tabulated. In looking at qualitative indicators such as thought units, facts and predictions, there were no significant differences between the imagery and no-imagery groups. The appreciable difference in the mean number of words written by the imagery group (66) and the mean number written by the no-imagery group (44) suggests, however, that mental imagery is a viable strategy for young writers.

The finding in favor of mental imagery with respect to total number of words written is significant in terms of the study's ecological validity. Teachers in the school where the study was conducted reported that the students are occasionally assigned to write about what they have read during the instructional reading program and that this activity is sometimes suggested in the basal manuals. The teachers reported that prior to the study the students had been given assignments such as "write a paragraph describing the major character in the story" and "make up another ending for the story." In addition, students responded to experimental materials adapted from a textbook similar to those used in the classroom, and the experimental activity closely resembled the kind of activity which, according to the classroom teachers, naturally occurred in the classroom.

Additional research is indicated that will investigate the effects of mental imagery upon the written expression of older students. Gambrell (1982) reported that mental imagery instructions during reading significantly increased the story recall of third grade readers, however, this was not so for beginning first grade readers. It may well be that mental imagery is an effective strategy for fluent, order readers and for fluent, older writers. While the mental imagery instructions facilitated third grade students in this study who were still at a beginning stage of fluent writing, it may well be that the strategy is more effective as students become more fluent in their writing ability.

Researchers investigating the writing process have suggested that reflection and contemplation play a significant role in the composing process (Graves, 1978; King, 1978; Stallard, 1974). One hypothesis suggested by this investigation is that mental imagery encourages reflection and contemplation in the young writer. Future research should employ observational techniques or video-taping procedures in order to determine whether mental imagery instructions affect the amount of time spent on writing and to provide clearer insights on how the young writer utilizes time during the composing process.

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Table 1

Means and Standard Deviations for the Imagery and No-Imagery Treatment Conditions

	Imagery Instructions (N=15)		No Imagery Instructions (N=13)	
	$\bar{M}$	S.D.	$\bar{M}$	S.D.
Thought Units	15.27	9.45	10.59	4.79
Facts	3.53	1.68	3.15	1.46
Predictions	8.27	4.57	5.62	3.84
Total Number of Words*	66.07	32.47	44.54	17.53

*significant at the .05 level